AMENDMENTS TO SPECIFICATION

Please amend the specification as shown in the following replacement specification:

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a method for blocking unsolicited commercial or advertising messages so as to prevent a subscriber of a mobile ~~wireless~~ communication terminal from receiving them, and more particularly to a method for allowing spam messages to be blocked by an SMS (Short Message Server) server, or in a mobile ~~wireless~~ communication terminal itself.

2. Description of the Related Art

A current mobile ~~wireless~~ communication terminal such as a mobile telephone does not have the ability ~~has no function~~ to block a text message, irrespective of whether or not the subscriber (or recipient) wants to receive it, once it is transmitted to the subscriber's phone number. Especially, there is no way to block SMS commercial or advertising messages (hereinafter also referred to as "SMS spam messages"), which have recently gained widespread use. It is very time consuming ~~troublesome~~ for the terminal's subscriber to have to check such a message he or she received without notice to determine if it is spam. ~~This~~ The receipt of SMS spam messages may also persuade the subscriber to ~~phone~~ call a call back number that causes the subscriber to ~~incurring~~ VAT charges, which can create ~~causes~~ emotional damage, as well as cause the subscriber to incur financial charges ~~damage, to the subscriber~~. These problems occur because, once a calling party transmits a message to a subscriber of a mobile ~~wireless~~ communication terminal, the subscriber has no choice but to receive it, irrespective of his or her desires. Thus, there is a need to protect the subscriber from such a damage and inconvenience.

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SUMMARY OF THE INVENTION

Therefore, the present invention has been made in view of the above problems, and it is an object of the present invention to provide a method for blocking an unsolicited or spam message, so as to prevent a subscriber of a mobile ~~wireless~~ communication terminal from having to check the message if he or she does not want to receive it.

In accordance with one aspect of the present invention, the above and other objects can be accomplished by the provision of a method for blocking SMS (Short Message Service) spam messages in an SMS server, comprising the steps of a) when an SMS message and its corresponding SMS message phone number to be transmitted to a subscriber of a mobile ~~wireless~~ communication terminal is received from a base station, determining if a spam blocking option is set; b)~~,~~ if the spam blocking option is set, accessing a spam-blocking information database, and searching for ~~a~~ the SMS message phone number to determine if the SMS message phone number is registered in the spam-blocking information database; and c) if the SMS message phone number is registered in the spam-blocking information database, ending the procedure for the received message without performing message processing for SMS services on the received message. ~~a), when an SMS message to be transmitted to a subscriber of a mobile wireless communication terminal is received from a base station, checking whether a spam-blocking option is set; b), when the checked result of step a) is affirmative, gaining access to a spam-blocking information database, and searching for a phone number corresponding to the received message to check whether the phone number corresponds to a phone number registered in the spam-blocking information database; and c), when the checked result of step b) is affirmative, finishing the procedure for the received message without performing message processing for SMS services on the received message, so that SMS spam messages are blocked from being transferred to the terminal's subscriber.~~

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In accordance with another aspect of the present invention, there is provided a method for blocking spam messages in a mobile ~~wireless~~ communication terminal, comprising the steps of a) when an SMS message is received, accessing a database of previously-registered, spam-blocking information to determine if the received message is an SMS spam message; and b) when is determined that the received message is a spam message, controlling the terminal so as not to notify receipt of the message. ~~a), when an SMS message is received, gaining access to a database of previously-registered, spam-blocking information to check whether the received message is an SMS-spam message; and b), when the checked result of step a) is affirmative, controlling the terminal so as not to notify receipt of the message.~~

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a block diagram illustrating ~~schematically shows~~ the configuration of an SMS (Short Message Service) system to which the present invention is applied;

Fig. 2 is a block diagram illustrating ~~shows~~ the configuration of a mobile ~~wireless~~ communication terminal to which the present invention is applied;

Fig. 3 is a block diagram illustrating the ~~shows~~ display states of the screen of a mobile ~~wireless~~ communication terminal when a user or subscriber operates the terminal to register or delete a to-be-blocked phone number or word in order to block such a spam message, according to first and second embodiments of the present invention;

Fig. 4 is a flowchart illustrating a method for registering a to-be-blocked phone number in the SMS server according to an embodiment of the present invention;

Fig. 5 is a flowchart illustrating a method for blocking spam messages in the SMS server according to the first embodiment of the present invention;

Fig. 6 is a block diagram illustrating ~~shows~~ a teleservice-layer message format employed in the embodiment of the present invention; and

Fig. 7 is a flowchart illustrating ~~showing~~ a method for blocking spam messages in a mobile ~~wireless~~ communication terminal according to the second embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Now, preferred embodiments of the present invention will be described in detail with reference to the annexed drawings. Although the following description has been made with reference to specific details such as a message containing specific content (for example, a warning message), it is only for illustrative purposes, and those skilled in the art will appreciate that the present invention can be carried out without employing such specific details. In the following description, a detailed description of known functions and configurations incorporated herein will be omitted when it may obscure ~~make~~ the subject matter of the present invention ~~rather unclear~~.

Fig. 1 is a block diagram illustrating ~~schematically shows~~ the configuration of an SMS (Short Message Service) system to which the present invention is applied.

As shown in Fig. 1 ~~this drawing~~, an SMC (SMS server) 1 is connected by wire to a base station 2. The base station 2 is connected to a mobile ~~wireless~~ communication terminal 4 through a wireless link 3. Using the terminal 4, a subscriber or user 5 can implement a procedure ~~database for~~ storing information for blocking spam massages (hereinafter also referred to as

"spam-blocking information database") in the SMS server 1, or can implement the procedure it in the terminal 4 itself.

Spam-blocking information to be stored in the spam-blocking information database includes words (for example, "advertisement" or "commercial") that imply an unsolicited message to be blocked from a viewpoint of the subscriber, or includes a receipt-refusal phone number (i.e., a phone number to be blocked).

Fig. 2 is a block diagram illustrating shows the configuration of a mobile wireless communication terminal to which the present invention is applied.

As shown in Fig. 2, The the terminal includes a transceiver 10, a key input section 20, a CPU (Central Processing Unit) 30, a display section 40, and a memory 50. The transceiver 10 performs processes for transmitting or receiving wireless signals. The key input section 20, as user interface means, has a number of keys including number and function keys. Using these keys, a subscriber can enter phone numbers he or she wants to block, so as to prevent receipt of spam messages. The CPU 30 controls the overall operation of the terminal. In addition, based on a previously-stored program and data for blocking spam messages (also referred to as "spam-blocking program and data"), the CPU 30 controls a spam-blocking operation according to an embodiment of the present invention. The display section 40 is a user interface means that may be composed of a liquid crystal display device or the like. Using this display section 40, the subscriber can check a message received by the terminal, or can check the state of the terminal. The memory 50, as a spam-blocking information database, stores words that imply unsolicited messages, phone numbers, or the like, to be blocked as selected by from a viewpoint of the subscriber. The memory 50 may further include a region for storing a warning message. The warning message may include, for example, a message "--- you will be prosecuted if you resend me a message like this, and ---". The warning message can be used to warn a spam sender, such

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that it is transmitted to a calling party when the calling party repeatedly sends a spam mail or message to the subscriber disregarding the receipt refusal thereof.

Fig. 3 is a block diagram illustrating ~~shows~~ display states of the screen of a mobile ~~wireless~~ communication terminal when a user or subscriber operates the terminal to register or delete a to-be-blocked phone number or word in order to block such a spam message, according to first and second embodiments of the present invention.

As shown in Fig. 3 ~~this drawing~~, when the subscriber selects a menu item "3: Internet/message" in a first menu screen "Menu" 301 of the ~~wireless~~ mobile communication terminal (or mobile telephone), a second menu screen "Internet/Message" 303 including 7 menu items is displayed as denoted by an arrow on the right side of the first menu screen "MENU" 301. Among the 7 items, a 6th item "6: spam message" is used to allow the terminal itself to generate a spam-blocking information database, while a 7th item "7: system spam-blocking setting" is used to generate the spam-blocking information database in an SMS server.

In detail, when the item "6: spam message" is selected, a third menu screen "Spam Message" 305 including three menu items is displayed as denoted by an arrow on the right side of the second menu screen "Internet/Message" 303. While the third menu screen is displayed, selection of a first item "register unsolicited phone number (word)" allows the subscriber to register an unsolicited phone number or word to be blocked, and selection of a second item "delete unsolicited phone number (word)" allows the subscriber to delete the registered unsolicited phone number or word, and further selection of a third item "send warning message" allows the subscriber to send a warning message.

Similarly, when the 7th item "7: system spam-blocking setting" of the second menu screen "Internet/Message" 303 is selected, a fourth menu screen "System Spam-Blocking

Setting" 307 including two menu items is displayed as denoted by a downward arrow on the down side of the second menu screen "Internet/Message" 303. While the fourth menu screen is displayed, selection of a first item "register unsolicited phone number (word) allows the subscriber to register an unsolicited phone number or word to be blocked in the spam-blocking information database of the SMS server, and selection of a second item "delete unsolicited phone number (word)" allows the subscriber to delete the registered unsolicited phone number or word.

Fig. 4 is a flowchart illustrating a method for registering a to-be-blocked phone number (also referred to as "unsolicited phone number") in the SMS server according to an embodiment of the present invention.

If the subscriber inputs spam-blocking information and instructs its transmission using the key input section 20 in the mobile ~~wireless~~ communication terminal, the information is transmitted to the SMS server through the base station. When the SMS server receives a message from the base station at step 4a, it is determined if ~~checked whether~~ the received message is a message for spam-blocking setting (also referred to as "spam-blocking setting message") at step 4b. When it is determined that the message is a spam-blocking setting message ~~the checked result of step 4b is affirmative~~, a phone number to be blocked is detected from the spam-blocking setting message, and then stored in the spam-blocking information database at step 4c. On the contrary, when the message is not a spam-blocking setting message ~~the checked result of step 4b is not affirmative~~, the SMS server performs message processing for a general SMS service at step 4d.

Fig. 5 is a flowchart illustrating a method for blocking spam messages in the SMS server according to the first embodiment of the present invention.

When, at step 5a, the SMS server receives an SMS message that is transmitted toward a

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called-party subscriber of a mobile ~~wireless~~ communication terminal from a calling party subscriber, it is <u>determined if</u> ~~checked~~ at step 5b ~~whether~~ a spam blocking option is set. When <u>it</u> <u>is determined that the spam blocking option is set</u> ~~the checked result of step 5b is affirmative~~, the spam-blocking information database is accessed to search for a phone number corresponding to the received message at step 5c. As a result of the search, <u>at step 5d</u> it is <u>then determined if the</u> <u>SMS message phone number</u> ~~checked at step 5d whether the phone number~~ corresponds to a phone number registered in the spam-blocking information database. <u>If it is determined that the</u> <u>SMS message phone number is registered in the spam-blocking information database,</u> ~~When the~~ ~~checked result of step 5d is affirmative, it means~~ <u>i.e.</u> that the received message is an unsolicited message to be blocked, ~~so~~ the procedure <u>ends</u> ~~is finished~~ without performing message processing on the received message. On the contrary, <u>if the SMS message phone number is not registered in</u> <u>the spam-blocking information database,</u> ~~when the checked result of step 5d is not affirmative,~~ message processing is performed on the received message for providing a general SMS service at step 5e.

Fig. 6 <u>is a diagram illustrating</u> ~~shows~~ a teleservice-layer message format employed in the embodiment of the present invention.

~~Definition of~~ <u>e</u>Each field <u>shown in Fig. 6 is defined in the</u> ~~in the format can be referred to~~ ITA/ETA-637-A <u>standard</u>, and, in particular, a call back number field <u>601</u> shown in Fig. 6 is important in realizing the present invention.

An SMS message is included in a teleservice layer of a message downloaded from a base station, which is classified into voice and text messages. The text message includes a phone number (a calling-party phone number, i.e., a call back number) as well as the text content of the message. ~~Accordingly,~~ <u>t</u>The phone number is detected and stored in a buffer, and, referring to the spam-blocking information database, it is used to determine whether to notify an incoming

call thereof, or to send a warning message.

Fig. 7 is a flowchart <u>illustrating</u> ~~showing~~ a method for blocking spam messages in a mobile ~~wireless~~ communication terminal according to the second embodiment of the present invention.

<u>As shown in Fig. 7,</u> ~~W~~when the terminal receives a call, the CPU 30 detects <u>the call</u> ~~it~~ at step 7a, and ~~checks~~ <u>determines</u> at step 7b <u>if</u> ~~whether~~ the received message is a spam message, i.e., an SMS spam message (or a ~~not shown unsolicited~~ phone number to be blocked). To this end, for example, the CPU 30 determines whether a call back number in the message contains a number, such as "700" or "0600", commonly included in commercial phone numbers incurring high charges, or the CPU 30 searches for a word such as "advertisement" or "commercial" in the text message. It will be appreciated by those skilled in the art that the spam-blocking accuracy can be increased in such a manner that the two determination processes are sequentially performed, and the received message is then considered an SMS spam message only if one of the two determination results is affirmative, as well as when both of them are affirmative.

When <u>it is determined that the received message is a spam message,</u> ~~the checked result of step 7b is affirmative,~~ the CPU <u>30</u> controls the terminal to disregard the received message and not to notify the receipt of the message at step 7c. Subsequently, at step 7d, it is <u>determined if</u> ~~checked whether~~ the received message is set to be stored. This step intends to prevent a non-spam message from being blocked by mistake. ~~When the checked result of step 7d is affirmative~~ <u>If it is determined that the storing function is set</u>, the received message is stored in the memory 50 at step 7e.

~~When the checked result of~~ <u>When it is determined in</u> step 7b <u>that the received message is not a spam message</u> ~~is not affirmative~~, <u>the subscriber is notified of</u> the receipt of the message ~~is~~

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~~notified to the subscriber~~ through known notification means, such as a bell sound or vibration at step 7f.

As apparent from the above description, according to the present invention, it is possible to effectively block SMS spam messages, thereby protecting users' privacy and preventing financial damage. In other words, there is no inconvenience for users to <u>determine</u> ~~have to check~~ and delete unsolicited commercial messages, because they can avoid receiving such messages. In addition, it is possible to prevent a user from phoning a call back number in a received message without knowing who sent the message, believing the received message might not be a spam message, thereby not incurring phone charges thereof. Further, separate storing means to store such a message is provided to prevent a non-spam message from being discarded by mistake.

Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.